

on numerous little-known species, and especially by the quantity of economic information collected.

Of the 800 plants enumerated, the richest orders are Leguminosæ with 78 species, Compositæ with 77 species, Gramina with 63 species, Cruciferæ with 57 species, Chenopods with 38 species. The large Umbelliferæ allied to Asafœtida are finely illustrated in plates 18 to 29; four new species are described. There remain still many points about these valuable gum-producing plants of Central Asia that are obscure. Of the 78 Leguminosæ, no less than 37 are of the genus *Astragalus*, and of these 13 are new. Of the petaloid Monocotyledons the most prominent are the Iridaceæ (2 new species of *Iris*), and the Liliaceæ (26 species, of which 3 are new).

The introductory narrative, with the lists of characteristic plants at different levels and localities, enables a phytographic botanist to apprehend the nature of the country and climate. Cabul is clearly a much richer country agriculturally than has been hitherto supposed. Corn can be cultivated without irrigation either above 3500 feet altitude, or in the vicinity of a river; and a large area between these levels is capable of irrigation. The dry and hot summer is, as was before well known, very favourable to the production of fruit, and it now appears almost equally so to the production of vegetables. Dr. Aitchison found "not uncommon," in clefts of rocks and escarpments of hill-sides, the common fig (*Ficus Carica*, Linn.), apparently wild; and collected both male and female branches, some of the male receptacles containing both male and gall flowers. Dr. Aitchison had few opportunities of examining the country above 5000 feet; at the spots he did visit he found a very scanty flora, and above 7000 feet absolute sterility.

Dr. Aitchison compared his collection in the Kew Herbarium, and had the assistance of Mr. W. B. Hemsley in the technical botanic work, and in arranging the plates; and the new species described are given as of "Aitchison and Hemsley," except a few Liliaceæ, &c., attributed to "Aitchison and Baker." By this plan Dr. Aitchison gives to botanists who cannot refer to the specimens a guarantee that the new species are "good," and that the list of names has been accurately worked out. It is indeed the closeness with which a list of the present kind is worked out that gives it more than a temporary value.

Praise is due to Dr. Murie, the Assistant Secretary of the Linnean Society, for the style in which this number of the Society's Transactions has been put out. Credit may certainly be given to the India Office for assisting in a publication of this class; somebody there must have discovered that the money spent by the old Company on Roxburgh and Buchanan-Hamilton, on Royle and on Wallich, was not money spent on ornamental books, but has been returned, many times over, to the Government coffers.

OUR BOOK SHELF.

The Principles of Agricultural Practice as an Instructional Subject. By John Wrightson, Professor of Agriculture and Principal of the College of Agriculture, Downton. (London: Chapman and Hall, 1888.)

THIS is a useful text-book, written in an interesting style, and by one who shows that in addition to being scientific he is thoroughly practical. The subject-matter of the book was first delivered as lectures to science teachers,

and it deals with the duties of teachers as well as the defects of students under examination. It exposes in commendable language the narrow grooves into which agricultural teaching under the Science and Art Department has fallen. This is called "molecular and microscopic" in place of "bold and comprehensive," which ought to be the suitable form of description if the Department were properly constituted.

The book is the first of a series of text-books. It disposes in a clear and unmistakable manner of many knotty points of difficulty to the farmer and to the student, in matters relating to the nature and composition of soils, kinds and qualities of manures—"artificial and natural," "general and special,"—also to the cultivation of soil, and the growth and rotation of crops. Under these various headings many popular fallacies are exposed, connected with the classification of soils, the action of lime and nitrate of soda when applied to soil, the value of silica and of farm-yard manure, the sources of the supply of nitrogen to the growing plant, and the supposed ultimate exhaustion of soil—called a "store-house, a laboratory, a vehicle"—by systems of cropping.

The merits and methods of "autumn-cleaning" are duly introduced. The valuable work of the Rothamsted experiments is fully acknowledged and concisely explained.

This new contribution to agricultural literature comes at an appropriate season, when there is a growing demand for text-books of a trustworthy kind: so few can be found which are not simply the incoherent drivel of men who have but a very limited and imperfect knowledge of the subject.

The work is written in a style which will lead the student to think for himself, and but for one serious blunder in the later pages we should have pronounced it to be exceptionally perfect. Partial toleration is extended to the practice of sowing down land to pasture with seeds swept from the stable-loft. The loss sustained by the country through Miss Ormerod's warble-fly is thrown into the shade by the loss which has resulted from this exploded system of seeding down to grass. We hope to see the error corrected in a second edition, which, judging from the value of the book, cannot be long in making its appearance.

A Season in Sutherland. By J. E. Edwards-Moss. (London: Macmillan, 1888.)

THIS is a pleasant little book, though it affords no kind of information to the naturalist or to the sportsman, while it can hardly pretend to rank as a contribution to *belles lettres*. But Mr. Edwards-Moss is acquainted with certain districts in the north of Sutherlandshire; he has thrown a fly, and shouldered a breechloader; and he writes of his experiences in an unpretentious and graceful way which ought to commend the little volume as an accompaniment to an after-dinner cigar. He also quotes freely from contemporary and other authorities, including amongst these that profound thinker and teacher, Mr. Mallock. Mr. Mallock, as quoted by Mr. Edwards-Moss, tells us that we should "learn to love the sea, and the woods," and also "the wild smell of the heather"; from which we may gather that Mr. Mallock has probably discovered some portion of the country in which the heather smells of patchouli.

LETTERS TO THE EDITOR.

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"Sky-coloured Clouds" at Night.

IN NATURE, June 28 (p. 196), Mr. Backhouse notes the appearance of illuminated clouds to northward at night. Similar

clouds are seen from here on almost every clear night near the summer solstice. For the last two years special note has been taken of them. In 1887 they were first seen at midnight on June 13, and last seen on July 20; this year their first appearance at midnight was on June 4, and they are still visible every clear night. The clouds are not, as far as I have observed, coloured, but shine with a pearly or silvery lustre. I have seen them at midnight as high as 30° altitude, but they are generally confined to the first 10° or so above the northern horizon. The facts that they vary greatly from night to night in appearance, being sometimes almost absent, and that one or two photographs that have been taken of them show them simply as ordinary cirrus clouds, all seem to indicate that they really are very high cirrus lighted by the sun.

I may add that the upper glows continue to be seen here, though with varying intensity, on every clear night both before sunrise and after sunset, but for the past year no reddish ring or glare has been observed round the sun in the day-time.

Ben Nevis Observatory, July 2.

R. T. OMOND.

Micromillimetre.

THE Council and the Fellows in general meeting have taken into consideration the objection raised by Prof. Rücker to the term micromillimetre.

This term was in use by microscopists long before the British Association Committee formulated their system of nomenclature; but nevertheless the Society are unwilling, on a question of precedence only, to insist upon retaining a word which may give rise to confusion.

The Council have therefore directed the editors of the Journal to discontinue the use of the term "micromillimetre," and to substitute for it that of "micron," which has been in use for as long a time as the former word.

This resolution has been confirmed by a general meeting of the Society, who agree with the Council in thinking that the term "micrometre," proposed by Prof. Rücker, would give rise to considerable confusion from its similarity to "micrometer."

FRANK CRISP,

Royal Microscopical Society, June 21.

Secretary.

A Prognostic of Thunder.

AMONG prognostics of thunder given in books and elsewhere I have never met with mention of what has for years been to me one of the most trustworthy of weather signs, viz. the formation of *parallel streaks or bars*, definite in form but limited in number, extent, and persistence, appearing chiefly in cirrus and cirro-stratus, but also on the surface (apparently) of nimbus. In cirrus they give often almost the first intimation of coming change after settled weather, and are almost, if not quite, invariably followed within twenty four or thirty-six hours by thunder. When they appear on nimbus the interval is much less, but they are not seen, I think, on the thunder-cloud itself. These small patches of definitely marked "parallel bars" are to be distinguished from the more general parallel arrangement which is often seen on a much larger scale, but which has not, so far as my observation goes, any very distinct value as a weather prognostic.

As the thundery season is now on, it would be interesting to have the observation confirmed by others, and the connection of this particular form of cloud with electric disturbance explained. I have no doubt of the fact, and have often, and several times within the present year, pointed out these "parallel bars" to friends who had never observed them, and hardly ever has my prediction of thunder failed to come true. In the very few cases in which thunder has not followed in the same locality, I think I may say that there have never been wanting instances of its occurrence within a moderate distance.

B. WOODD-SMITH.

Branch Hill Lodge, Hampstead Heath, June 29.

Parasites of the Hessian Fly.

ALTHOUGH numbers of these most useful insects were bred last year from puparia of 1886 and 1887, there seemed to be a good deal of doubt among some entomologists as to whether the American species, *Merisus destructor*, had occurred. I bred a

large number of various kinds, four of which appeared to me to agree in every respect as to form, colour, and marking with the description given by Prof. Riley.

During the present month (June) I have bred a very large number of this parasite, specimens of which (both male and female) I sent to Dr. Charles Lindeman, of Moscow, who has just replied that "the specimens of parasites sent, bred in England from the Hessian fly, seem to me to be *Merisus destructor* of Riley, &c." He thus fully confirms my opinion of last year, that the American parasite had occurred here. Early in the spring I bred several other parasites which, I am much inclined to think are *Platygaster herrickii* of Riley; and, if this is correct, it strengthens the opinion that part of the attack came from America.

The damp muggy weather appears to be decidedly favourable for the development of "the pest," the larvæ of which I found at the beginning of this week engaged in weakening the stems of barley; and on June 2 I observed a female Hessian fly ovipositing. The number of eggs laid was 158! Truly a most prolific "pest," requiring both natural and artificial means to check its increase.

F. E. S.

Fact and Fiction.

AS Mr. Grant Allen reads NATURE,—indeed this is evident from a sentence in his novel "This Mortal Coil," now in course of publication in *Chambers' Journal*—he will perhaps be good enough to satisfy my doubts upon the following practical points in electro- and thermo-physics. Firstly, in order to successfully attract a flash of lightning to a tree, is it necessary to bury beneath its roots a Rhumkorf coil? Secondly, do Rhumkorf coils exist which are *without* secondary wires? Thirdly, will an electric discharge ignite commercial petroleum oil?

While it is not undesirable that scientific fact should be imported into modern fiction, it is surely important that it should be fact: loose statements are apt to perpetuate themselves.

Mr. Allen is exceptionally well read and observant, and I am quite at a loss to understand why a simple solution of continuity in that part of his copper conducting wire which was immersed in the petroleum would not as well have served his purpose (if indeed, that purpose could have been effected in the way described), as the elaborate expedient of burying and destroying an expensive piece of apparatus.

Dublin, July.

HARRY NAPIER DRAPER.

The Nephridia of Earthworms.

THE number of NATURE published on June 28 last contains (p. 197) an interesting paper by Prof. Baldwin Spencer, which deals with the excretory system of the gigantic Australian earthworm *Megascolides*. Prof. Spencer promises an extended memoir upon the anatomy of this earthworm, which has not hitherto received more attention than a superficial description. In the meantime the paper in NATURE contains an abstract of the results obtained by the author from his investigation of the nephridia.

This paper is particularly interesting to myself, as I am at present preparing an account of some further investigations into the anatomy of the excretory system of earthworms, which will supplement those already published by me in the *Quart. Journ. Micr. Sci.* (January 1888).

It appears from Prof. Spencer's paper that, as he himself points out, there is a considerable resemblance between the excretory organs of *Megascolides* and of *Perichata aspergillum*, one of the species investigated by me; there are at the same time certain important differences between the two types.

In my paper upon *P. aspergillum* I described only the nephridia of the anterior segments of the body. I have since found that the nephridia of the posterior segments are in some respects different. In both cases, however, the external orifices are more numerous than I was at first inclined to suspect. They are not limited to the area of the segments which lie between the setæ, but are found all over the body, scattered irregularly; they have, in fact, no relation whatever to the segmentation of the body.

The tufts of tubules in the posterior segments of the body are not so abundantly developed as in the anterior segments, where they not only form a layer covering the body-wall and septa but occupy nearly the whole of the coelomic space available.